

DOCUMENT-IDENTIFIER: US 20030097918 A1

TITLE: Device for cutting paper webs

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Summary of Invention Paragraph - BSTX (6):

[0006] A device for trimming the edges of paper webs with the aid of a water jet is known from WO 97/11814 A1. This device is employed in the course of paper production. In this case it must be assumed that the paper to be trimmed contains residual moisture, so that moisture possibly picked up from the cutting jet is not noted in an interfering manner. No great demands are being made on the accuracy of cutting, in particular no accurate register is required, because the paper to be cut has not yet been imprinted.

US-PAT-NO: 6319364

DOCUMENT-IDENTIFIER: US 6319364 B1

TITLE: Method and apparatus for dividing a paper web

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Brief Summary Text - BSTX (4):

A paper web formed in a paper machine has varying width and its edges are uneven as regards straightness, thickness and grammage. It is therefore necessary to edge-trim the paper web during some part of the manufacturing process. A number of different techniques have been proposed in order to achieve a paper web with straight edges and having predetermined width.

Brief Summary Text - BSTX (5):

One known technique for edge-trimming a formed paper web is to trim the edges from the web when the finished, reeled paper web is rewound in a rewinder. The waste of dried paper that is formed during this edge-trimming is extremely voluminous, which complicates its collection and removal to be re-dissolved in water and returned to the paper manufacturing process.

Brief Summary Text - BSTX (6):

According to another known technology, edge-trimming occurs in the paper machine at a point between the drying section and the reel-up, with the aid of high-pressure water jets, air jets, rotating knives, or rotating saw blades. This technology thus requires installation of extra equipment in the extremely limited space available between the drying section and the reel-up.

Brief Summary Text - BSTX (7):

According to yet other known technology, the edge trimming occurs in the wet section of the paper machine, before the drying section. For example, it is known from U.S. Pat. Nos. 2,686,463 and 2,709,398 to trim the edges of a paper web on a fourdrinier wire with the aid of water jets so that it is divided into an edge-trimmed web, and couch trimmings, after which the

edge-trimmed web is removed from the wire for transfer to the drying section, while the couch trimmings are prevented from reaching the drying section. However, it has been found that this technology cannot be used for paper grades having low grammages, such as soft paper, since the couch trimmings adhere to the pickup felt used for removing the edge-trimmed web and therefore tend to accompany it to the drying section.

#### Brief Summary Text - BSTX (8):

In a twin wire former it is in practice known to perform edge trimming of the paper web while it is supported by one of the forming fabrics at a point immediately before the pickup means. Water jets are generally used for edge trimming, these jets encountering the paper web with relatively high pressure to produce an edge trimming and an edge-trimmed web. One drawback is that, after having divided the paper web, the water jets spread, splashing water around the whole area. If the supporting fabric is a felt, as in the case of a crescent former, there is considerable risk of fibers and fiber fragments being pressed into the felt. The pressure of the water jets must be limited in order to reduce the risk of their damaging the felt. In spite of these measures, however, the water jets gradually cause wear on the felt and this wear may affect the paper web, causing edge rupture and consequent risk of web rupture. The felt also becomes wetter along the dividing lines formed by the water jets than over the rest of the felt, which may cause problems since the drying cylinder becomes wetter opposite these dividing lines than over other parts of the outer surface of the drying cylinder, thereby incurring problems with corrosion and deposits. The water jets from the jet tubes may also easily cause the paper edge to thicken around the water jets and this thickening may result in deterioration of the adhesion to the drying cylinder at the edge portions of the paper web. The outer surface also becomes hotter opposite the dividing lines, which may cause the paper web to become detached from the outer surface. To solve these problems and provide a paper web with straight edges and of a predetermined width in a crescent former, therefore, the outer forming fabric may be provided with impermeable edge portions, as described in U.S. Pat. No. 3,652,390. The inner parallel edges of said edge portions facing each other thus determine the width of the finished paper web, and the width is chosen dependent on the grade of soft paper to be manufactured. When the manufacture of soft paper is to be changed from one grade to another, for example from tissue to toweling paper, the width of the finished paper must be changed in order to avoid undesirable losses during conversion of the paper web to the desired final products. To enable such a change in manufacture from one paper type to another, the outer forming fabric of the crescent former must be dismantled and replaced by another forming fabric with a different width between the impermeable edge portions. This exchange is laborious,

time-consuming, and entails undesired loss of production. Increased costs for forming fabrics are also incurred, as well as space for their storage.

**Brief Summary Text - BSTX (10):**

U.S. Pat. Nos. 1,279,756, 2,857,822 and 4,560,438 disclose still other examples of methods and apparatus for edge trimming in a paper machine before the drying section.

**Brief Summary Text - BSTX (13):**

The present invention seeks to reduce the aforementioned problems in the known technologies for edge trimming a paper web, and to provide a method and apparatus for dividing a web by a completely new technique making it possible to divide the paper web into two or more partial-width webs and/or to trim edge portions from a formed paper web.

US-PAT-NO: 5908534

DOCUMENT-IDENTIFIER: US 5908534 A

TITLE: Method and device for web cutting in the former of a  
paper machine

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Detailed Description Text - DETX (5):

The first jet cutter 10 has two nozzles spaced apart from each other, each providing a water jet 12 to slit the newly formed paper web into two edge trimmings and a paper web with the desired width of the finished paper web, the width thus corresponding to the distance between the water jets from the two nozzles. The nozzles are arranged at the same distance from the vertical central plane of the forming roll and are adjustable in relation to each other in order to increase or decrease the distance between them and, thus, the width of the paper web of final width.

Detailed Description Text - DETX (9):

As the two edge trimmings obtained during trimming on the forming roll are hard to remove from the inner forming fabric when the inner forming fabric is a felt as is the case in a crescent former, the edge trimmings usually will accompany the trimmed paper web of final width past the yankee dryer in the following drying section (not shown) of the crescent former and not be removed from the vicinity of the trimmed web until these parts of the web have passed the yankee dryer.

US-PAT-NO: 5338282

DOCUMENT-IDENTIFIER: US 5338282 A

TITLE: Automatic trimming machine

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Abstract Text - ABTX (1):

The automatic trimming machine of the present invention utilizes a conventional web press to print various sizes of postal and insert cards, flyers and coupon books completely on-line. The automatic trimming machine of the present invention includes a device for perforating the paper to define a folding line and a paper folding device for folding the paper along the perforated folding line. A preliminary trimming unit will first trim the left and right sides of the folded paper, including removing the backbone of the folded paper. The severed backbone is then removed from the preliminary trimming unit. The top and bottom **edges of the paper are then trimmed** to the appropriate size prior to the paper being cut into distinct products in a finish trimming unit. The finish trimming unit includes a plurality of adjustable cutting blades to allow for cutting of various sized products.

Brief Summary Text - BSTX (9):

A folded paper will then proceed to a preliminary trimming unit which trims the folded paper. The preliminary trimming unit includes a first, a second, a third and a fourth knife. The first knife is positioned on a second side of the folded paper for cutting the folded paper to a specified size. The second knife is positioned on the first side of the folded paper for cutting the backbone from the folded paper. The third and fourth knives are positioned to **trim the top edge and bottom edge, respectively, from the folded paper**. A vacuum removal device is positioned above the second knife for removing the severed backbone.

Detailed Description Text - DETX (3):

The folded paper P is fed to a preliminary trimming unit 20, shown in FIG. 2. The preliminary trimming unit includes a first knife 22 for **trimming the**

**left side of the folded paper** P to a specified size. The left side of the folded paper P is opposite the backbone B formed by the folding unit 16. The preliminary trimming unit 20 includes a second knife 24 adapted to sever the backbone B of the folded paper P. Both the first knife 22 and the second knife 24 may be formed as a pair of stainless steel rotary knives positioned above and below the paper to be severed. The upper blades of the first knife 22 and the second knife 24 may be mounted on a single upper blade shaft 26. The lower knife blades of the first knife 22 and the second knife 24 can be mounted on a single lower blade shaft (not shown) mounted below the paper to be severed. Either or both of the upper blade shaft 26 and the lower blade shaft (not shown) may be driven in a conventional fashion.

US-PAT-NO: 5066865

DOCUMENT-IDENTIFIER: US 5066865 A

TITLE: Single sided reflectance sensor for measuring select  
physical properties of a material using one or more  
wavelengths of radiation

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Brief Summary Text - BSTX (8):

This condition limits the ability to accurately measure the select physical properties near the edge of the paper, particularly where there is sheet movement in the cross-direction. At best, the center of a circular shaped beam cannot be located closer than half the diameter from the paper edge. Where the sensor is being used to measure and control the amount of coating applied to paper, for example, the unmeasurable portion of the coated **paper near the edge must be trimmed** away to avoid reel building problems.



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| 1        | 5968 | (belt-press or press-belt or (belt near1 press\$3) or beltpress or pressbelt)               | USPAT;<br>US-PGPUB | 2003/06/24 13:03 |
| 2        | 853  | 162/206   | USPAT;<br>US-PGPUB | 2003/06/24 13:04 |
| 3        | 92   | ((belt-press or press-belt or (belt near1 press\$3) or beltpress or pressbelt)) and 162/206 | USPAT;<br>US-PGPUB | 2003/06/24 13:08 |
| 4        | 106  | (162/118,120).CCLS.   | USPAT;<br>US-PGPUB | 2003/06/24 13:13 |
| 73       | 95   | (162/283,285).CCLS.   | USPAT;<br>US-PGPUB | 2003/06/24 13:14 |